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THE SEVENTH CENSUS OF POPULATION IN CANADA, 1931

THE results of the seventh census of population in Canada, taken as of June 1, 1931, are comprised in 14 octavo volumes, of which all except the final volume of maps and graphs and certain monographs to be included in the two volumes of census monographs, have been issued. The present review is confined to the population census proper, including, however, the topics of gainful occupations, earnings, and unemployment; on the other hand, agriculture, merchandising and services, and institutions are omitted. In other words, the present review is limited to volumes I-VII, together with those monographs included in volumes XII and XIII which treat the topics of these seven volumes, so far as the monographs themselves have been issued. The advantage of considering the monographs in connection with the corresponding topics of the census itself is obvious, since the detailed analytical treatment of the former helps to throw into clear light the census findings and adds materially to the value of the results.

An outline of the contents of the several volumes may help to give perspective to the whole subject. Volume I contains, in addition to the administrative summary of the work of the census, a brief analysis and comment on each of the major subjects covered by the census, together with a selection of tables on all topics; the text covering 344 pages and the tables 1,177 pages. Volumes II-VII are devoted to tabular matter; volume II to population figures for local subdivisions, with details by sex, age, etc., for these areas; volume III to age classifications; volume IV to "cross classifications," e.g. birthplace with racial origin, literacy, religion, etc.; volume V to wage-earners, earnings, families, and housing; volume VI to unemployment; and volume VII to occupation and industry. Volumes XII and XIII are devoted to monographs on various subjects, of which nos. 2 (age), 4 (racial origin), 5 (illiteracy), 6 (rural-urban composition), 7 (the family), 9 (dependency of youth), and 11 (unemployment) have

been available at the time of the preparation of this review[1] and fall within its field.

As to technical presentation, the volumes are issued in octavo, a much handier size for general use than the quarto size used in the United States census publications. Owing to the need in Canada for presentation in both French and English, the volumes of tabular matter are issued with both French and English titles, table headings, and notes, while the volumes consisting principally of text are issued in separate French and English editions.

As compared with the preceding census, there has been not only a great expansion, 11 volumes of statistics instead of 5, but also a reorganization. In 1921 each volume contained both tables and explanatory text; in the present census the explanatory text is presented in a single volume in conjunction with the basic statistical tables, while the remaining volumes contain tabular matter only. In addition, the monographic treatment is greatly extended. For the ordinary user the general summary of the entire census in volume I should suffice. For the user interested in the more theoretical aspects of some one or more topics, the special monographs furnish valuable additional data. The remaining volumes are designed for the user who needs detailed tables on some special topic; thus, details for small local subdivisions are contained in volume II. For the rest the general organization is by subjects; the user interested in a subject, such as earnings or unemployment, will find this material concentrated in a single volume, while the person interested in a particular province, a particular type of community, such as urban communities of over 30,000 population, or in a general classification such as age, race, or nationality, will find materials relating to his special interest in all the volumes of the census.

General results. The census gives a total of 10,376,786 persons in the Dominion of Canada, including Indians and Eskimos as well as Whites, Negroes, Japanese, and Chinese, etc. How far does this figure depart from the truth? The answer to this question is obviously fundamental to the evaluation of a census. No special discussion is apparently given to this problem; though a great deal of pertinent information is presented. In considering this question, the evidence to be examined includes principally: (1) the methods of enumeration; (2) regularity of growth trends —irregular trends may suggest errors in present or past censuses; (3) analysis of age data; (4) comparison with birth, death, and migration records; and (5) results of recounts.

[1]Monograph no. 2 has been supplied in page proof through the courtesy of Mr. R. H. Coats, Dominion Statistician.

The methods of enumeration are described in detail in the Administrative Report,[2] which incidentally is a most valuable feature of volume I. The fact that the census is taken by a permanent Census Bureau (established, 1901) with a permanent organization which is able to carry forward the experience of one census to the next, and with technique and machinery tending to become more and more adapted to the task, is a most important element in arriving at a conclusion as to the value of the results. In detail, the operations included listing of administrative units and population aggregates and allocating them to 15,167 census enumeration areas. Some 14,000 enumerators were selected, given special training and instructions, followed by a special examination before appointment, and carefully supervised throughout. A number of elements in methods adopted bear upon the accuracy of the census, for example, method of payment, critical date, type of census, etc. Enumerators were paid, for the most part, on a piece basis according to the number of persons enumerated or schedules taken, the scale of pay varying, however, according to the general type of the district. Obviously, if the rate of pay was not sufficient adequately to remunerate the taking of the census in sparsely settled regions, the census employee might shirk his duty in respect of the less inhabited areas and confine his attention to the cities and villages where his pay promised a larger reward for his time. Rates of pay and the method of payment, therefore, vary according to the density of population and special circumstances. In the sparsely settled Northwest Territories, in Indian reservations, and in the far north region special methods of enumeration are followed. The date of the census is set by law sometime in June, and June 1 was adopted as the critical date. A date early in the summer is preferable to a later date on account of the disturbing influence of vacations and travel in modifying the distribution of population. A date in winter or early spring is unsatisfactory on account of bad roads and difficulties of travel. The fact that the last three censuses have all been taken in June makes the results comparable with those of preceding censuses. Evidence is given to show that the 1931 census was taken somewhat more promptly than the preceding one, the bulk of the returns (77.6 per cent) being in by the end of July, although in some cases returns, especially from outlying regions, were delayed.

The census is of the so-called *de jure* type, that is, the census is of resident population. This is in contrast to the *de facto* method prevailing in Europe, the latter being preferred in European experience on account of the greater ease in securing complete enumeration of persons in transit and of those who are away from their usual place of abode, the entire

[2]Vol. I, pp. 29-96.

census of the population being completed in one day. Comment to the effect that "the trend of practice is toward the *de jure* system" (p. 37) seems of doubtful significance; it may be true that the *de facto* censuses have tended to pay more attention in their tabulations to a *de jure* classification of the population, but there is certainly no tendency to substitute a leisurely several-weeks *de jure* census on the American plan for *de facto* one-day enumerations. It is of interest to note the special methods followed in the Canadian census to secure enumeration of persons who happen to be away from their usual place of abode. Where the enumerator finds a closed house or an absentee family, he fills out a special card giving the particulars and his pay includes allowances for such returns. These cards permit a check-up of information in cases of families or persons who are away from home. Persons in transit, on vacation, and otherwise away from home offer an especially serious problem in *de jure* census taking, and the extent of possible omissions would be worth special investigation.

A second type of evidence consists in the study of trends to see whether the results of a census are consistent with those of preceding censuses. An example of this type of test is the case of the United States census of 1870, where an examination of trends in preceding and subsequent censuses indicated a marked under-enumeration in certain Southern States, especially of Negroes. This test is usually more significant when the date of a subsequent census becomes available, though, if trend figures appear far out of line either for the population as a whole or for sub-groups, such as Indians, Eskimos, Chinese, etc., it may suggest points for critical examination. A study of the trend figures for Indians, for example, indicates that for their group the census of 1871 was obviously deficient.

A third method of testing the results of the census is through a study of age returns. In the case of enumeration of young children, this can be combined with a comparison of data from birth and death records.[3] The number of children under the age of one year in Canada enumerated on June 1, 1931, was 202,668. According to registration records the number of births from June 1, 1930, to May 31, 1931, may be estimated at 242,234 and the number of deaths among these children up to June 1, 1931, at 14,817 (70 per cent of the estimated infant deaths for the same period), leaving 227,417 estimated survivors under one year. The deficiency of

[3]The most thorough test of this character with which the writer is familiar is the name-for-name check of birth records with census schedules for children under one year of age in the District of Columbia at the time of the 1920 census. On the basis of this test a correction was made in the results of the census correponding to a 9 per cent deficiency in the case of whites and a 25 per cent deficiency in the case of coloured (see *United States Abridged Life Tables, 1919-1920*, U.S. Bureau of the Census, Washington, Government Printing Office, 1923, p. 9).

10.9 per cent in the census enumeration is entirely comparable with that shown by the same sort of test in the United States census. Of course a certain proportion of these children may be returned as over one year of age. Similar tests in the United States indicate, however, at least in certain areas, a deficiency, though less marked, in the enumeration of children from one to four years of age.

Another interesting test is to compare the number reported at age 10 in 1931 with the number under one year of age in 1921. The latter figure is 209,666; if this is increased by 10 per cent to allow for the usual deficiency at this age, it becomes 230,633. From this should be subtracted deaths during ten years, estimated roughly at 4 per cent, leaving 221,408. From this should be subtracted also the number of those who emigrated, during this period, say 2 per cent. The number enumerated at age 10 in 1931 was 222,880, of whom some 6 per cent were foreign born, leaving 209,500 as survivors of those enumerated ten years earlier. Owing to the tendency to report ages in round numbers, this figure is too high, by at least 2 per cent. Apart from emigration, there is a discrepancy of 7 per cent, and if emigration is taken as 2 per cent the discrepancy is still 5 per cent. These estimates, however, are perhaps too shaky and involve too many assumptions to be relied upon as proof of deficiency in enumeration, unless confirmed by other tests or special investigations.

One may also compare the Canadian-born children 10-14 in 1931 with the survivors of the children 0-4 in 1921. The former, 1,005,768, is then compared with the survivors of the 1,057,549 children of 1921, and estimating the ten-year deaths at 32,000 a total of 1,025,000 survivors remains. If an allowance is made for emigration, the two figures appear fairly consistent. Of course, this does not prove that they are correct, since they may both be deficient; and in this test as in the preceding the difficulty of an estimate for emigration has to be faced.

Another type of test is the use of birth, death, and migration records to calculate changes which have taken place since the preceding census. But the excess of births over deaths during the 10 years, in round numbers, 1,270,000, plus immigration, 1,370,000, added to the 1921 population gives a population in excess of that enumerated in 1931 by 1,050,000; satisfactory figures on emigration are wanting. The migration records are usually the weakest link, and the results of such a check-up in other countries usually reveal discrepancies which persist year after year, leading to the conclusion that the enumeration figures are better than the figures based on the calculations. In any case, the basic data at the beginning and end of the period are both of the census type so that at best the comparison involves the consistency of two censuses as to their degree of accuracy.

Finally, the census may be tested by comparison with the results of other enumerations taken at or near the same time. In the United States, for example, recounts of the population of a city have sometimes been ordered where complaints of the conduct of the census have been received or the results have appeared to give too small a population, with the result either of confirming the original count or of providing a different and presumably better result. With respect to this point, however, no information as to any complaints or recounts is given in the Canadian census and it is to be presumed, therefore, that no such special recounts were needed.

In summary, apart from the estimation for under-enumeration of very young children, the principal result of this summary is to confirm the difficulty of appraising the extent of possible error, the chief element in the appraisal being the high quality of the personnel, techniques, and methods followed. So far as the omissions of young children are concerned, they do not in themselves constitute a large error, since even assuming that such omissions equal 10 per cent of the population under one year of age, this would mean an error of only 0.2 per cent of the whole population. There is certainly room for the development of methods for testing the accuracy of census enumerations, for example of the floating population, of persons in transit, on vacation, students, and other groups which offer special problems to the census takers.

Growth of population. The subject of growth of population is treated in chapter I, of volume I, covering 54 pages, as well as in separate monograph no. 2.[4] A valuable feature of this chapter is the chronological summary of population growth in Canada, with sources of information, 1605-1931, which brings up to date, with corrections and additional data, an earlier report prepared by Mr. J. C. Taché for the Dominion census of 1871.

The discussion of growth is limited to the so-called "white" population. This excludes Indians, but appears to include all other elements, for example Eskimos, Negroes, Chinese, Japanese, as well as the white population proper. There seems no reason why the term white should be applied to this population nor why if the Indians are excluded the Eskimos should not also be excluded throughout, as they must have been in the early part of the period covered.

The growth of population is analysed by decades and is related to historical events, such as the American Revolution, the Irish famine, rail-

[4]Neither the monograph on Growth of Population (no. 1) nor that on Fertility (no. 3) was available to the reviewer.

road building, and the opening up of the West. It is also closely linked up with parallel movements of population in the United States.

It is noteworthy that little or no discussion of changes in accuracy of the census is given as a possible factor in the variations in rates of growth. In particular, the change in apparent trend between the period 1891-1901, with a rate of increase of only 11 per cent, and the period 1901-11, with a rate of increase of 35 per cent, raises the question whether the 1901 census was as complete as the other two. The high rate of immigration between 1901 and 1911 is, of course, alone adequate to explain a sharp increase in rate of growth. But the increase of the Canadian-born, according to the figures, reached a low point in the decade 1891-1901, decennial rates of increase being, beginning with 1861-71, 23.3, 21.2, 16.0, 13.4, 15.6, 14.2, and 14.6. In this series, the figure 13.4 appears distinctly out of line and suggests the possibility that the 1901 census may have been deficient. An hypothesis, for example, that the 1901 census of the more sparsely populated Western Provinces was less complete than that for the Eastern Provinces, with the result that a western migration of the Canadian-born was inadequately represented in the census owing to incomplete enumeration, would seem plausible as an explanation of the unusually low figure for the increase in the Canadian-born in the decade 1891-1901. I do not mean to suggest that such an hypothesis would necessarily be confirmed after an examination of all the evidence—which I am not in a position to make—but merely that the possibility of error in the returns does not seem to have been taken into account in the discussion.

Urban-rural composition. The subject of rural and urban composition of the Canadian population is discussed in chapter II of volume I and in monograph no. 6.[5] The only definition of "urban" available for showing the growth of the urban population over a considerable period is one based upon incorporation. A more satisfactory definition, of course, would include a definite minimum of size. Details are given of the dates of incorporation of all the urban centres of Canada. The present census introduces the "farm and non-farm population" as new classifications. The monograph presents a general treatment of the whole subject of the rural and urban population, together with an analysis by sex and age, conjugal condition and the birth-rate, and racial origin and nativity composition. The discussion of standardized birth-rates in the different classifications of rural and urban population after adjustment of non-resident births is of special interest.

Age. The topic of age is treated in chapter III of volume I and in

[5]S. A. Cudmore and H. G. Caldwell, *Rural and Urban Composition of the Canadian Population.*

monograph no. 2.[6] Volume III is devoted to tables showing age classifications of the population and, in addition, age classifications are found also in the other volumes of tables.

Apart from its intrinsic interest, the age classification throws light upon the general accuracy of the census. A familiar census phenomenon is the heaping-up of age returns around numbers divisible by 10, 5, or 2, and around critical ages, such as 21, the voting age, and 70, the pension age. In this respect little improvement appears in the census of 1931 as compared with that of 1881, in fact, between 30 and 65 mis-statements of age appear more prevalent in 1931. This curious result suggests the need for further analysis, for example, comparing rural and urban errors, and examining the relation with illiteracy, and it would be interesting to compare the results, for example, with those in the United States and other countries.

The proportion classified as of age not stated is often viewed as an index of the quality of the returns. This proportion diminished from 1.36 in 1881 and 1.31 per cent of the total population in 1891 to 0.04 per cent in 1931. An analysis is presented of the sources of this percentage, and it is shown that in 1881, the cases of unstated age were largely derived from certain regions and communities, and the decrease is thus definitely to be ascribed to an improvement in the technique of the census.

Tables are given showing the differences in the proportions of the population in each five-year age group in the different provinces and comparing distribution in Canada with that in a number of other countries. Contrasts are shown between the total population and the immigrant population.

Two other points may be worth mention. The possibility of women around the age of 20 under-estimating their ages is not mentioned as a reason for the excess of females in the group 15-19. A similar phenomenon appears in the censuses of a number of countries.

The second point is the refusal to consider as of any consequence the fact that, for the first time in 1931, the first five-year age group is smaller than the second five-year age group. On the other hand, an examination of the annual numbers of births in Canada indicates that the numbers are already declining and that the maximum appears to have been reached. In the United States, the change in trend of the birth-rate is already quite striking. Intensive studies have shown that in the United States about the year 1930, the population changed from an increasing to a stable or declining trend. Such a trend in Canada may not be as far advanced as in the United States, especially in respect of the French population with

[6]Murdoch C. MacLean, *The Age Distribution of the Canadian People.* Examined in page proof supplied through the courtesy of R. H. Coats, Dominion Statistician.

its relatively high birth-rate. For the British population of Canada, however, it would seem reasonable to expect a development similar to that in the United States.[7]

The chief topic of the census monograph on age is the development of an index by which the stages of development of the age distribution in Canada and different cities and provinces can be studied and appraised. The technique is based upon three indexes, the percentage of population under 25, the percentage of population over 65, and the "standard age," defined as the standard deviation from age 24 of the population between the ages of 25 and 65.[8] With the aid of these three indexes and an indication whether a given community falls above or below the average for the country as a whole, the different populations, communities, provinces, urban and rural areas, are grouped into six different types, showing the effects of high and low birth-rate, and high and low immigration or emigration. The device is ingenious, although with regard to the "standard age," it is not clear that the use of the simple average age of the population between the ages of 25 and 65 would not have been equally significant. The age types of population can be easily described in any case; the effects, for example, of high birth-rate are a high proportion of children and young persons under 25 and a low proportion of aged persons. Also easily recognized are the peculiar age distribution of cities as a result of immigration and the corresponding age distribution in rural areas as a result of emigration. There is much to be said, however, for some simple index to characterize the types of age distribution corresponding to these basic population movements.

Nativity and racial origin and related topics. A group of topics connected with nativity and racial origin are treated in chapters V-IX, XI-XII, XV, and XVI of volume I and in census monograph no. 4.[9] These include, in addition to nativity and racial origin, birthplace, year of immigration, religion, mother tongue, nationality (allegiance), the Canadian-born and the immigrant population.

The subject of nativity, native and foreign born, and country of birth offer no particular problem, although the changes of boundaries of countries of Central Europe after the Treaty of Versailles make comparison difficult

[7]But cf., W. Burton Hurd, "Some Implications of Prospective Population Changes in Canada" (*Canadian Journal of Economics and Political Science*, vol. V, Nov., 1939, pp. 492-503).

[8]The explanation of the standard age given (page proof) on page 24 is inaccurate. "The standard age was measured by squaring the different quinquennial groups for 25 to 64, averaging these squares and extracting the square root." Cf., "standard age is the root mean square deviation from age 24 of the population 25-64" (Appendix).

[9]W. Burton Hurd, *Racial Origins and Nativity of the Canadian People.*

with pre-war censuses. The object of the classification by racial origin is to give a better picture of racial groups in the population than can be furnished by birthplace, since the latter ignores differences in racial groups of those born in Canada and the United States. The definition of racial origin, however, offers some difficulties; in the case of mixed parentage, the origin is derived through the male line, an important element in the definition which does not appear in the text of the census chapters. The failure to explain this point is the more confusing in that the excellent chapter on birthplace has already emphasized that the group with mixed parentage shows variations with age according to the period of immigration. At all events there is a considerable amount of error arising from confusion between race, language, and country of birth. Especially for the region of Central Europe, mother tongue can be used as a check on racial origin, and in the monograph a revised table is presented in which the figures for the races in Central Europe are in some cases considerably modified.[10] It is interesting to note that no correction was made for Hebrews. It is emphasized that racial origin is considered not as an ethnological characteristic but rather from the point of view of its social implications. The British and French racial origins together account for four-fifths of the population.

The relative importance of immigration from north-western Europe and from south-eastern Europe is discussed in chapter II of the monograph, while chapter IV shows how the immigration to the Prairie Provinces differs from that to British Columbia and to the Eastern Provinces. The differences in the urban and rural distribution are treated in chapter V. An ingenious index of segregation is presented in chapter VI, and indexes of intermarriage in chapter VII.

The chapter on crime analyses the relative contribution to crime of the different race and nativity groups. Unfortunately in this comparison there seems to be an error, with the result of showing that the foreign-born make a very disproportionate contribution to crime: the allowance for age was calculated for ages 16 and over, but apparently applied to percentages based upon all ages; in fact, instead of contributing nearly twice as many, age for age, as the Canadian-born, the foreign-born contribute only very slightly more than their due proportion to crime. The discussion of mental institutions would be improved by a distinction between feeble-mindedness, which affects the younger ages, and mental illness, which affects the older ages.

[10]The census figures are altered more than 10 per cent in five instances, as follows: Russian −32 per cent, Yugoslav + 30 per cent, Rumanian −25 per cent, German + 16 per cent, Czechoslovak + 12 per cent; in four cases between 4 and 10 per cent, Ukrainian (+9), Bulgarian (+7), Polish (−6), and Finnish (−4).

In the analysis of correlations between infant mortality and other factors, a high correlation is found with high fertility, and the comment is offered that it would seem reasonable to presume a causal connection between fertility and infant mortality. A difficulty, however, appears at once when one considers the chance of dying of a particular infant in a particular family: its chances of life are not intimately (causally) affected by the circumstance that a large number of births may have occurred in other families of the same race in the same or other cities: in other words, the general fertility of a group does not directly affect the particular infant who lives or dies.[11]

It is not clear exactly what the purpose of this analysis (and of similar analyses) is: if to throw light upon casual relationships, it seems a pity to select for study an obviously unsatisfactory "factor"; if it is to make possible an estimate of the probable infant mortality rate of a racial group given certain data, such as average fertility, average percentage urban, etc., it is an interesting application for the ingenuity of formulae of estimation, but would appear to have no further value; if it is to be able to determine what is the "true infant mortality" associated with a particular racial group, when various factors such as fertility, percentage urban, etc., are held constant, the problem is an intriguing one, but is not resolved by separating away these so-called "factors," since it remains to be proved, on the one hand, that these "factors" are properly to be separated from the concept of the mortality associated with the racial groups, and, on the other, that the residual after separating away "factors" has any meaning, or that if all the necessary factors have been eliminated there is any residual.

Many other points in connection with these topics might be discussed. The subject of religion—a topic which is not covered, for example, in the United States census enumerations—offers difficulties especially in regard to definition. The census blank calls for the "religious body, denomination or community, to which this person adheres or belongs." Presumably children are classified according to the religion of their parents; but no discussion is given to the question of their classification when the religious affiliation of their parents differs. A vexing question is the problem of classifying unsatisfactory or vague statements of religious affiliation, for example "the Greek Catholic." The Orthodox (Eastern) Church and

[11]With respect to the particular infant's chances of life, certain factors which are associated in some cases with high or low fertility come into consideration, e.g. (1) order of birth, (2) age of mother, (3) interval since preceding birth, and (4) interval before a succeeding birth if within one year; also, the possible effect of a death influencing the parents to have another child to replace the loss.

its subdivision the Greek Church are clear; but "Greek Catholic" as a popular term may (probably) mean Roman Catholic of Greek race, or it may (perhaps) mean the Greek Church or the Orthodox Church. The 1929 census grouped the "Greek Catholic" with the Greek Orthodox and the Greek Church, while the 1931 census classified the "Greek Catholic" with the Roman Catholic.

The section on the "sex attitude" toward religion appears to give merely a sex classification of those belonging to each denomination. In many cases the preponderance of males or of females is due not to any difference in attitude as between the sexes but merely to a preponderance of males or females in the race group chiefly concerned. Thus 94 per cent of those belonging to the Confucian religion are males, while of the Chinese 10 years of age and over in Canada 95 per cent are males; the preponderance of males in the Confucian religion is obviously merely a reflection of relative proportion of the sexes among the Chinese.

Illiteracy, school attendance, and dependency of youth. The subjects of illiteracy and school attendance are treated in chapters XIII and XIV of volume I and in census monograph no. 5.[12] In the discussion of illiteracy the principal point to which the reviewer would take exception is the attempt to establish the existence of an illiterate class in the words "illiteracy is the brand of a class." The suggestion is even made that to reduce illiteracy would not be worthwhile and might even be harmful, since it would not eliminate the class (p. 19 of monograph). This reasoning is not only unconvincing, but it is in fact largely disproved by the evidence presented in the census itself. The percentage of illiteracy has steadily diminished from 13.8 per cent unable to read or write of the population 10 years of age and over in 1891, to 4.5 per cent in 1921, and 3.4 per cent in 1931. Analysis according to race and nationality shows, as would be expected, that the percentage is much higher for Eskimos, Indians, and Chinese, etc., and for foreign-born than for Canadian-born. Analysis according to age shows that the percentage of illiteracy is much higher for older persons and relatively low for those who are now finishing their schooling. In other words, as would be expected, illiteracy is a consequence of absence or insufficiency of schools and as more and better schools are provided for the different areas and groups of the population illiteracy tends to be eliminated. The evidence that there is an "illiterate class" is seen, upon analysis, merely to be based upon the fact that within a population group or area the percentage of illiteracy among different parts of the group tends to be determined by the same causes. Thus, for example, among the Eskimos the percentage of illiteracy is high; the Eskimos live in

[12]Murdoch C. MacLean, *Illiteracy and School Attendance.*

rural rather than urban surroundings; they tend to marry Eskimos, and consequently the tendency for (Eskimo) illiterate husbands to have illiterate wives and for their children to be illiterate does not establish illiteracy as the "brand of a class," nor does it prove that the Eskimos should not be educated. Similar reasoning applies to other area, race, or age groups. Obviously, immigrants from a country where school facilities are inadequate cannot be expected to possess an education. The very fact that the younger ages have very low illiteracy, and that as the older age groups pass off the scene the average percentage of illiteracy tends to fall eliminates most of the evidence of the "brand."

In the section of the monograph on school attendance, the point of view is presented that time spent at school under age seven is largely wasted and that school should not begin until age seven. The reasoning upon which this is reached involves a calculation which seems highly questionable, based upon the increase in mental age. In any case, the value of education under the age of seven may, in fact, lie not in gains measurable in terms of reading, writing, and arithmetic, but in the development of interests, attitudes, and habits, and of group co-operation. It may be worth noting that in a recent study of the education of orphanage children, a group who were placed in carefully supervised classes at ages as early as three and four years, showed much higher intelligence quotients and a much more developed mental ability as measured by the usual tests than a control group who were not subject to this programme of teaching. Certainly the best educational systems in the large cities have steadily tended to increase their facilities in establishing kindergartens to give school training to children below the usual age for first grade. However, this type of controversial topic is for specialists in education; and to argue that the census results favour eliminating schooling under age seven appears to the reviewer to go beyond the actual evidence of the census.

Census monograph no. 9[13] which treats of the dependency of youth and summarizes data on earnings, school attendance, and defects, may be discussed at this point. It brings together the evidence showing the increase in dependency in Canada, as tested by the earnings and by school attendance. In general there is an additional period of dependency of two years as compared with 1921. The figures show an increase in school attendance of a corresponding amount. After leaving school and entering industry, there is a period during which earnings do not suffice for independence, a period which in the case of boys is estimated, from data on earnings in relation to age, at one and three-fourths years. The cost of rearing a child up to age 18 is estimated at $5,750. The discussion brings out certain

[13]J. E. Robbins, *Dependency of Youth.*

defects in the available statistics for Canada, for example, the absence of budgetary studies, which is now being remedied by sample studies in different parts of Canada, and the absence of data on income. An interesting point is that the cost of raising a family of seven illiterates is estimated as the same as that of raising a family of six children and providing them with a good education.

A final chapter is devoted to dependency resulting from physical, mental, and social defects. The discussion of mental cases is handicapped by failure to distinguish between the feeble-minded and the mentally ill. Feeble-mindedness or mental defect appears at relatively early ages, while mental illness is due to entirely different causes and affects principally adults.

Gainful occupation. The subject of the gainfully occupied is discussed in chapter XVII of volume I and in census monograph no. 10.[14] Volume VII is devoted to statistical tables on occupation and industry.

It is difficult to comment on the treatment of this subject in the absence of the detailed monographic study, since the points suggested by the examination of the chapter are doubtless all adequately considered in the monograph. It is surprising not to find in chapter XVII any summary of the trends in the percentages occupied by age. These trends are, for example, for males, 10-13, 1.1 per cent; 14, 11.2 per cent; 15, 26.5 per cent; 16-17, 55.1 per cent; 18-19, 80.2 per cent; 20-4, 92.5 per cent; 25-34, 97.6 per cent, etc.; and for females for the same ages, 0.1, 1.9, 6.0, 20.7, 40.3, 42.3, and 21.7. These figures would seem to be especially appropriate for a summary chapter and lend themselves readily to significant comment. For women a classification according to marital condition would also be pertinent.

Certain occupations are designated as juvenile, male, female, etc., according to whether they include more than the due proportion of juveniles, etc. Thus agriculture is designated as a juvenile male occupation on the ground that 60 per cent of the juvenile males occupied are found in agriculture as compared with only 34 per cent of the entire male population. A better basis for calling an occupation a "juvenile" occupation would be that the majority of persons following it are under 25—for example, messengers, office boys, etc.—as is done in table V under the caption "Juveniles in Occupation." Agricultural occupations are unusual in that they have not only a disproportionate number of persons under 25, but also of elderly persons.

Important points which are not treated in the summary chapter (though they doubtless are in the detailed monograph) are the industrial as

[14]Not available to the reviewer.

distinguished from the occupational classification of the occupied population, the classification of the occupied according to industrial status, whether employer, wage-earner, or working on own account, and the proportion of persons following each occupation who are foreign born. As to the latter point, the question is whether the principal source of the skilled labour is foreign immigration, and whether the percentage of persons with foreign training has changed materially according to recent censuses.

Other points worth noting include difficulties of definition. One of these, peculiar to Canada, is the fact that the French term *"ouvrier"* is used much more frequently in French-speaking districts than the corresponding designation "labourer" in English, with the result that a larger proportion of persons in the French-speaking districts have to be classified as "labourer" or *"ouvrier"* than in English-speaking regions.[15]

The definition and classification of unpaid family workers are important causes of differences in occupational censuses in different countries. Some European statisticians appear to believe that the low proportion of women gainfully occupied reported in the censuses of Canada and the United States is due to failure to include women who do farm work as gainfully occupied. In this connection it is interesting to note that of the 284,000 unpaid family workers reported in agriculture in Canada only 3,200 (one per cent) were females; (incidentally, of the 281,000 males, 47 per cent were under 20 years of age, while almost as many, 45.5 per cent, were between 20 and 30 years of age).

In general, the classification adopted in Canada follows closely that of the United States census of 1930, an advantage when comparisons are sought between industrial and occupational characteristics of the two adjoining countries. However, some differences appear. For example, in the industrial classification, "automobile repair service" is classified in Canada under the "service" group of industries, while in the United States it is classified with "iron and steel, machinery and vehicle industries." In this connection may be mentioned the work of the Committee of Statistical Experts of the League of Nations in drafting for the consideration of statisticians of the various countries a minimum nomenclature for use in the industrial classification of the gainfully occupied population.[16]

Unemployment. The subject of unemployment is treated in chapter

[15]In Quebec, 25 per cent, and in New Brunswick 34 per cent, were so classed, as compared with an average of 21 per cent for Canada (Unemployment monograph no. 11, p. 44).

[16]League of Nations, Committee of Statistical Experts, *Report to the Council on the Work of the Sixth Session held in Geneva from 19 to 24 April, 1937* (L.O.N. Publications, II, Economic and Financial, 1937, II.A.5).

xviii of volume I and in monograph no. 11,[17] while the whole of volume VI is devoted to tabular analyses.

The question as to unemployment was asked in respect of wage-earners only and covered the questions whether the individual was employed or unemployed on June 1, 1931, and, if unemployed, from what cause, whether he had lost time from work during the year ending June 1, 1931, and, if so, the number of weeks of unemployment from each cause, space being provided for "no job," "temporary lay-off," "illness," "accident," "strike or lockout," and "other causes."

The material is analysed in relation to age, conjugal condition, sex, average weekly wage, occupation, and other points. The average time loss was 9.54 weeks per wage-earner, 10.7 for males and 5.3 for females. Males were employed on the average 41.3 weeks and females 46.7 weeks in the year; if stated in terms of man-years, these figures correspond to 1,606,739 males and 492,084 females employed full time, while unemployment was equal to 471,275 man-years of idleness. In percentages, this means 18.3 per cent of "wage-earners" unemployed, 20.5 per cent for males and 10.2 per cent for females. (Curiously enough, these rather significant percentages I do not find in the chapter.) A very considerable proportion of the time lost by unemployed males is reported as lost by labourers or unskilled workers (45.8 per cent), or by farm labourers (9.4 per cent), while of the time lost by unemployed females a large proportion was lost by domestic servants (26.8 per cent) or stenographers and typists (12.1 per cent) or saleswomen (11.2 per cent). This unusual concentration in a few occupations suggests the possibility that the occupation returns of persons out of work may not have been as accurate or precise as that for employed persons. So far as causes of lost time are concerned, "no job" is reported first, with 80.3 per cent, and "temporary lay-off" second, with 12.6 per cent; illness accounted for only 5.7 per cent of lost time, accident for only 0.9 per cent, strikes for only 0.05 per cent, and "other" for 0.45 per cent. This classification of causes shows that the enquiry covered not only unemployment in the limited sense, but also certain other causes of lost time. So far as illness is concerned, the average loss by men (0.55 weeks) slightly exceeded that lost by women (0.51 weeks), although in most detailed studies of illness women have a larger time loss than men.

The monograph on unemployment examines first the problem of the accuracy or reliability of the material, and compares the figures obtained in answer to the two questions, one as to unemployment on June 1 and the other as to weeks of unemployment during the year, and reaches the con-

[17]M. C. MacLean, A. H. Le Neveu, W. C. Tedford and N. Keyfitz, *Unemployment.*

clusion that the two agree surprisingly well, and that where there are divergencies they are adequately explained by the factor of seasonal incidence. In addition, comparisons are made with other non-census data on unemployment. An extensive analysis is made of the relation of unemployment to age, occupation, and to industrial structure, and new and significant conclusions are reached. An interesting table, in view of recent discussions on unemployment among older workers, is a graduated table (p. 198) showing the unemployed as a percentage of wage-earners at each age with a maximum of 23.1 per cent at 19 or 20, a minimum (18.2 per cent) at 39, and a second maximum (28.9 per cent) at age 71 for males, and maxima (11.5 per cent) at age 16 and (9.7 per cent) at age 66, and a minimum of 7.1 per cent at age 33 for females.

To do justice to this monograph in this brief space is difficult. It is a pioneer study, in which new methods are applied to the abundant materials afforded by the Canadian census, and the results are compared with other studies on the subject. It is a mine not only of information but also of methods and techniques.

Families, earnings, and housing. These three topics present the contribution of the Canadian census to the elucidation of the standard of living of the population. The data on families show the number of households and of private families, together with the number of persons, the number of earners, and the number of dependants, particularly for the families of wage-earners; data on earnings show income of wage-earner's families derived from earnings of the different family members. Together these show family earnings in relation to family size and composition. In addition, the figures on housing show details of how families are housed.

Data on the family are given in chapter XIX, "Families and Earnings," and in monograph no. 7.[18] Statistical tables are given in volume V. The statistics of families is an especially valuable contribution of the Canadian census. Not only are figures given of the average size of family and details of the composition, but they are placed in relation to housing, earnings, occupations, occupational class, and dependency of children, with sub-classifications by urban and rural, racial origin—in short, a very complete and satisfactory analysis of family data. The monograph on the Canadian family is an excellent presentation, in which various statistical devices and techniques are utilized to develop the full meaning of the results. Minor difficulties, which it seems almost ungracious to point out, include, in the short chapter devoted to the early history of the Canadian family, the suggestion that a large number of the Acadians "perished from grief and misery"—causes of death which are not found in the Inter-

[18]A. J. Pelletier, F. D. Thompson and A. Rochon, *The Canadian Family*.

national List. A reservation might be made in connection with the calculations of the size of completed families arising from the inclusion of stillbirths in determining the number, a fact which tends to exaggerate the size of large families. This is the more true in that where stillbirths occur the number of births in the family is likely to be larger. One wonders how much the conclusion on page 21 should be altered: "Our entire natural increase in population is made possible by the families of nine or more children which constitute 13.9 per cent. of the total number of families." On page 82 the suggestion is made that "lack of flexibility in income with increasing family responsibilities among the wage-earning class is admittedly one of the major causes of our declining birth rate"—a statement which seems much too sweeping.

The discussions of the effect of migration and urbanization upon family size and its variations from census to census are particularly good.

The subject of earnings also is treated in chapter XIX of volume I, and in chapter IX of monograph no. 7.[19] The data on earnings are limited to wage-earners and their families. In the preceding census (1921), data on earnings were obtained for wage-earners in cities of 30,000 population and over; in the present census, these figures are extended to cover all wage-earners, and they are organized to give family earnings for families whose heads were wage-earners, classified according to the earnings of the head of the family. Only cash earnings are included. Information is available not only on the average family earnings, but also on the average earnings of the wage-earners themselves, and of their wives and children. The average earnings per person in the family from wife and children were $44 in wage-earners' families, and wives and families contributed one-sixth of the total income of these families. The average annual earnings of families with wage-earner heads was $1,330 per family. Data are shown also on the frequency of earners, that is the number of families with more than one wage-earner. The number of earners per family averaged 1.33. These figures represent, therefore, an effort on a nation-wide scale to obtain data on family earnings in relation to the size of family, and number of wage-earners. For wage-earners' families, these figures probably correspond fairly closely with a family income distribution.

The principal gap in the treatment of the earnings data is the failure to consider the problem of the accuracy of the data and to compare the data with other sources of information on earnings. It must be conceded, however, that the change in emphasis to family earnings makes exact comparisons with data from other sources particularly difficult. The treatment of this subject in the monograph seems inadequate, probably

[19] *Ibid.*

because the chief interests of the writers of the monograph were the family rather than earnings, and no provision was apparently made for a discussion of earnings in a separate study.

Housing and rentals are discussed in chapter xx of volume I and in monograph no. 8.[20] Tables on housing are contained in volume V. In the field of housing, the Canadian census gives information on households of families of different types with average number of persons and average number of rooms per dwelling, characteristics of dwellings, and rentals in relation to size of house, size of family, and earnings. One-person households constituted 7.1 per cent of all households and lived-in dwellings averaging 3.4 rooms each. Almost as many of the households consisted of two or more families, 6.3 per cent. Ordinary households consisting of single families of at least two persons numbered 2,252,729; 60 per cent were owners; and three-fourths lived in single-family dwellings and 15 per cent only in apartments or flats.

So far as overcrowding is concerned, data are given in chapter xx for two cities only, Montreal and Toronto. In the former 40 per cent of the families lived in dwellings with more than one person per room, while in Toronto only 24 per cent lived in such houses. For the census as a whole, similar data on overcrowding are apparently not available. A table showing the classification of households according to the number of persons in the household on the one hand and the number of rooms in the dwelling on the other, would be necessary to show the degree of overcrowding.

Though dwellings are classified according to materials of construction and type, whether detached, semi-detached, etc., no attempt is made to obtain data on equipment or comfort, whether equipped with bathrooms, running water, toilets, electricity, gas supply, kitchenettes. Data are given on the presence of radios. In this connection may be mentioned the recommendations on housing statistics contained in the report of the Committee of Statistical Experts of the League of Nations.[21]

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Many topics, and many excellencies, of the published volumes have had to be passed over without comment, for example, the allocation of representation—(in Canada representation is apportioned according to the basic law in uite a different manner from that followed in the United States) —the description of methods of tabulation in the Census Office, and a most valuable key to all the tabulations of the results of preceding censuses.

[20]Not available to the reviewer.

[21]Series of League of Nations Publications, II, Economic and Financial, 1938, II.A.7.

As compared with the census of 1921, that of 1931 represents improvements along a number of lines. Apart from the considerable increase in the bulk of tables, the concentration of text in the single volume is an important improvement. New features have been added and others expanded. The data on housing have been notably developed and improved, a new section is devoted to unemployment and the data for 1921 which were previously not published are included in the 1931 volume. Some topics have been altered in their scope; for example, earnings, which has been changed from a study of annual earnings of wage-earners in large cities to one of family earnings for all wage-earners throughout the country. A considerable expansion in the scope and development of the monographs is to be noted. It is here, perhaps, that the greatest advance is to be found, i.e. in the development and application of technique and methods to bring out the significant results which the census offers, but offers only to thorough analysis.

A word of special praise for the monographic treatment is amply deserved. It has always seemed to the writer a great pity to spend vast sums in collecting census material and then fail to utilize the data to the full for want of special analysis. Some hold, it is true, that the census has performed its task when it has collected and published the raw data. But surely the Census Office is in the best position—at all events it should be in the best position—to analyse and to develop with the collaboration of special experts the meaning of the facts which it has assembled. In the monographs the Canadian census has done this with excellent results. In these monographs not only are the important facts discussed and emphasized but the full resources of statistical technique are brought to bear upon various problems of analysis and interpretation.

As compared with censuses in other countries, the development of each topic in the Canadian census might be appraised by references to the best work on that topic done in any country. Such a comparison might not always be fair, however, since countries with larger populations may offer greater possibilities for fuller development, and because a particular topic in Canada in the special circumstances of that country might not justify the complete analysis which would be useful elsewhere. For example, the work of the British statistical offices in linking the results of mortality statistics and the census of occupations in decennial supplements on occupational mortality represents by far the best work in that field—indeed, it is practically the only example of its kind. In this field, the United States has not found it possible to obtain satisfactory results on account of the differences between the designation and allocation of occupations in the census returns and on the death certificates. As to whether a similar

tabulation in Canada would prove satisfactory no evidence is available but the probabilities are rather against it on account of the relatively recent establishment of the registration area covering all the provinces, as well as, perhaps, on account of the use of vague terms in designating occupations, such as "labourer," *"ouvrier,"* already mentioned.

Many of the standard topics of the census are well established, however, and the scope and purpose of the tabulation of these follow well-defined lines. As to these topics, the Canadian census may claim a place with the best. The Canadian census has developed certain topics farther than most other countries, in particular family statistics; it has taken the lead in the statistics of family as distinguished from individual earnings and its analysis of materials on unemployment represents a distinct contribution to this subject. Its census of housing, however, is scarcely up to the Swedish or British enquiries on this topic in relation to overcrowding, for example, or to the Italian in relation to equipment and comfort. The census of occupation and industry follows the usual lines and it may be noted that it includes classification according to industrial status which has not yet been carried through in the United States.

In conclusion, the 1931 population census of Canada may fairly be judged a distinguished contribution in its field.

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